



# The Science of Patient Safety: Longitudinal Studies in an Environment of Change

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## Methods

not – Patient safety projects are exposed to many extrinsic influences in the environment. These include: 1) support from administration, 2) support from other staff members, 3) facilities modifications and leadership transitions. These influences, however, provide the impetus for change. In some cases, patient safety can be explicitly implemented. In other cases, patient safety becomes an implicit part of the organization's culture. The implementation of patient safety is a process that requires time and effort. It is a process that requires commitment and dedication. It is a process that requires a team approach. It is a process that requires a commitment to continuous improvement. It is a process that requires a commitment to patient safety.

## Results

**Methods**

In November, 2012, the UCLA Clinical Laboratories began collecting specimen error information based on 15 categories (Table 1), as determined by faculty nurses, and laboratory staff. Baseline data regarding each of these error types was collected through March 2013.

Critical patient identifier categories were specifically followed throughout the project. The 3 categories of critical patient identification errors that occurred most frequently were:

- Specimen identification mismatch
- Specimen identification mismatch
- Unlabeled specimens

These patient safety activities were introduced at 4, 10, and 14 months [Figure 1].

- Four months, the laboratory began providing phlebotomy services around the clock; nursing in-service education was performed at CBU nursing preceptorship.
- Ten months, an electronic event reporting system was instituted system-wide.
- Fifteen months, an automated processing system was activated in specimen receiving in UCLA Clinical Laboratories.

**Statistical analyses were performed on the data collected, by two methods:**

1.1 Paired Student's t-test was conducted to measure and compare unlabelled specimens, specimen requisition times (initial and final) and mislabelled specimens before and after interventions by the three safety activities. This test was used to determine if there was a statistically significant difference between the two under different conditions.

2. Linear Trend Analysis (the one on a graph that indicates a statistical trend) was conducted on the collected data to determine if the interventions resulted in a statistical trend.

**Statistical analyses were performed on the data collected, by two methods:**

- 1-Paired Student's t-test was conducted to measure and compare untreated specimens, specimen requisition mismatched and misaligned specimens before and after interventions by three patient safety activities. This statistical test measures the difference in mean values between two related groups on the same measurement scale. In this case, we used it to determine whether there is a statistically significant difference between the two different conditions.
- 2-Lineal Trend Analysis (a line on a graph that indicates a statistical trend) was conducted on the collected data to determine if the interventions resulted in a statistical trend.

Specimen Error Category	Description
Specimen loss	A specimen is lost.
Specimen mix-up	A specimen is mislabeled.

GENERAL INFORMATION	
NAME	Mr. John Doe
ADDRESS	123 Main Street, Anytown, USA
PHONE NUMBER	(555) 123-4567
E-MAIL ADDRESS	john.doe@example.com
EMPLOYMENT INFORMATION	
EMPLOYER	ABC Corporation
POSITION	Sales Representative
HOURS WORKED	40 hours per week
WEEKLY PAY	\$1,200.00
EDUCATION	
DEGREE	Bachelor of Science in Business Administration
INSTITUTION	University of California, Berkeley
GRADUATION DATE	May 2010
EXPERIENCE	
WORK EXPERIENCE	2 years sales experience at ABC Corporation.
NON-WORK EXPERIENCE	Volunteered at local food bank for 1 year.
SKILLS	
TECHNICAL SKILLS	Proficient in Microsoft Office suite, basic knowledge of CRM software.
SOFT SKILLS	Excellent communication and interpersonal skills, strong work ethic.
REFERENCES	
REFERENCE NAME	John Doe's Manager at ABC Corporation
RELATIONSHIP	Supervisor
CONTACT INFORMATION	(555) 123-4567, john.doe@example.com



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**Conclusion** The study demonstrated that the implementation of a computerized reporting system for laboratory specimens resulted in significant improvements in patient safety and error rates. The electronic reporting system was activated after 14 months, an automated processing system was installed 1 year later, and a statistical analysis using paired t-tests was conducted to measure and compare unpaired specimens, specimen requisition times, and turnaround times. The results showed significant improvements in all categories compared to performance prior to the implementation of the new system. The findings demonstrate the ability to decrease the number of critical errors and improve patient safety as a message received by the health care community. Patient safety and error rates have provided a source of major concern to healthcare institutions. Preventive measures can be taken to reduce the incidence of errors and to increase the quality of care delivered to patients. The findings of this study can be used to help other healthcare facilities implement similar systems.

## References

1. The incidence of clinical patient identification errors can be increased in an environment of change. Despite numerous organizational and accreditation activities within UCA, a trend analysis demonstrated continuing decreases in patient identification errors throughout the study. Consistent during this period, however, was the managerial and faculty leadership within UCA Clinical Laboratories. Major external factors may not be disruptive to patient safety initiatives if the immediate leader has identified patient safety as a major goal for a healthcare operating unit. Leadership's commitment to patient safety is an important factor in an initiatives success.

2. A significant decrease occurred in the category of specimen/label mismatch after the implementation of centralized phlebotomy and educational in-service sessions. Internal reorganization of processes and training can provide an immediate result, even when capital for major information technology investments are limited.

3. The response to a new patient record system aligned with a decrease in the category of mislabeled specimens and other test requisitions. These errors are associated with a new patient record system (not the lab in this study). Frequently, they are only identified in response to a secondary inquiry. I did not order a blood specimen from this patient.' This new system record indicated erroneous patient identifier.

4. Longitudinal analysis of patient identification errors shows that changes made in April, 2003, were sustainable to January, 2005. The sustainability of patient safety initiatives can become an issue as awareness is fluctuated or decreased. Sustainability may be directly related to awareness and inversely related to a 'house' factor which consists of conflicting messages, multiple messages, and/or changing or inconsistent goals and objectives (Figure 6).

## Conclusions

1. The incidence of clinical patient identification errors can be increased in an environment of change. Despite numerous organizational and accreditation activities within UCA, a trend analysis demonstrated continuing decreases in patient identification errors throughout the study. Consistent during this period, however, was the managerial and faculty leadership within UCA Clinical Laboratories. Major external factors may not be disruptive to patient safety initiatives if the immediate leader has identified patient safety as a major goal for a healthcare operating unit. Leadership's commitment to patient safety is an important factor in an initiatives success.

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